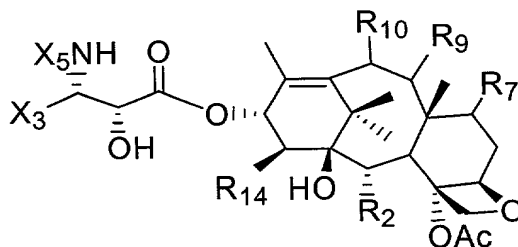


Claims

1. A taxane having the formula:



- 5 wherein

- R_2 is acyloxy;
 R_7 is carbamoyloxy;
 R_9 is keto, hydroxy, or acyloxy;
 R_{10} is hydroxy;
10 R_{14} is hydrido or hydroxy;
 X_3 is substituted or unsubstituted alkyl, alkenyl, alkynyl, phenyl or heterocyclo;
 X_5 is $-\text{COX}_{10}$, $-\text{COOX}_{10}$, or $-\text{CONHX}_{10}$;
 X_{10} is hydrocarbyl, substituted hydrocarbyl, or heterocyclo; and
Ac is acetyl.

2. The taxane of claim 1 wherein R_7 is $R_{7a}R_{7b}\text{NCOO}-$ and R_{7a} and R_{7b} are independently hydrogen, hydrocarbyl, substituted hydrocarbyl, or heterocyclo.

3. The taxane of claim 2 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

4. The taxane of claim 2 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

5. The taxane of claim 2 wherein X_5 is $-\text{COX}_{10}$ wherein X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ wherein X_{10} is t-butyl.

6. The taxane of claim 2 wherein R_{14} is hydrido.

7. The taxane of claim 6 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

8. The taxane of claim 6 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

9. The taxane of claim 6 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

10. The taxane of claim 2 wherein R_2 is benzoyloxy.

11. The taxane of claim 10 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

12. The taxane of claim 10 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

13. The taxane of claim 10 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

14. The taxane of claim 2 wherein R_{14} is hydrido and R_9 is keto.

15. The taxane of claim 14 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

16. The taxane of claim 14 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

17. The taxane of claim 14 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

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18. The taxane of claim 2 wherein R_2 is benzoyloxy and R_9 is keto.

19. The taxane of claim 18 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

20. The taxane of claim 18 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

21. The taxane of claim 18 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

22. The taxane of claim 2 wherein R_{14} is hydrido and R_2 is benzoyloxy.

23. The taxane of claim 22 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

24. The taxane of claim 22 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

25. The taxane of claim 22 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

26. The taxane of claim 2 wherein R_{14} is hydrido, R_9 is keto, and R_2 is benzoyloxy.

27. The taxane of claim 26 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

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28. The taxane of claim 26 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

29. The taxane of claim 26 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

30. The taxane of claim 1 wherein R_7 is $R_{7a}R_{7b}\text{NCOO}-$, one of R_{7a} and R_{7b} is hydrogen and the other is hydrocarbyl, substituted hydrocarbyl, or heterocyclo.

31. The taxane of claim 30 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

32. The taxane of claim 30 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

33. The taxane of claim 30 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

34. The taxane of claim 30 wherein R_{14} is hydrido.

35. The taxane of claim 34 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

36. The taxane of claim 34 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

37. The taxane of claim 34 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

38. The taxane of claim 30 wherein R_2 is benzoyloxy.

39. The taxane of claim 38 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

40. The taxane of claim 38 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

41. The taxane of claim 38 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

42. The taxane of claim 30 wherein R_{14} is hydrido and R_9 is keto.

43. The taxane of claim 42 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

44. The taxane of claim 42 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

45. The taxane of claim 42 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

46. The taxane of claim 30 wherein R_2 is benzoyloxy and R_9 is keto.

47. The taxane of claim 46 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

48. The taxane of claim 46 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

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49. The taxane of claim 46 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

50. The taxane of claim 30 wherein R_{14} is hydrido and R_2 is benzoyloxy.

51. The taxane of claim 50 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

52. The taxane of claim 50 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

53. The taxane of claim 50 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

54. The taxane of claim 30 wherein R_{14} is hydrido, R_9 is keto, and R_2 is benzoyloxy.

55. The taxane of claim 54 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

56. The taxane of claim 54 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

57. The taxane of claim 54 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

58. The taxane of claim 1 wherein R_7 is $R_{7a}R_{7b}\text{NCOO}-$, one of R_{7a} and R_{7b} is hydrogen and the other is substituted or unsubstituted $C_1 - C_8$ alkyl, phenyl, furyl, thienyl or pyridyl.

59. The taxane of claim 58 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

60. The taxane of claim 58 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

61. The taxane of claim 58 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

62. The taxane of claim 58 wherein R_{14} is hydrido.

63. The taxane of claim 62 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

64. The taxane of claim 62 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

65. The taxane of claim 62 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

66. The taxane of claim 58 wherein R_2 is benzoyloxy.

67. The taxane of claim 66 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

68. The taxane of claim 66 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

69. The taxane of claim 66 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

70. The taxane of claim 58 wherein R_{14} is hydrido and R_9 is keto.

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71. The taxane of claim 70 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

72. The taxane of claim 70 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

73. The taxane of claim 70 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

74. The taxane of claim 58 wherein R_2 is benzoyloxy and R_9 is keto.

75. The taxane of claim 74 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

76. The taxane of claim 74 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

77. The taxane of claim 74 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

78. The taxane of claim 58 wherein R_{14} is hydrido and R_2 is benzoyloxy.

79. The taxane of claim 78 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

80. The taxane of claim 78 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

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81. The taxane of claim 78 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

82. The taxane of claim 58 wherein R_{14} is hydrido, R_9 is keto, and R_2 is benzoyloxy.

83. The taxane of claim 82 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

84. The taxane of claim 82 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

85. The taxane of claim 82 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

86. The taxane of claim 82 wherein X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

87. The taxane of claim 86 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

88. The taxane of claim 86 wherein X_3 is furyl or thienyl.

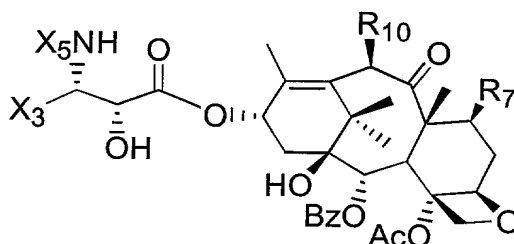
89. The taxane of claim 86 wherein X_3 is 2-furyl.

90. The taxane of claim 86 wherein X_3 is 2-thienyl.

91. The taxane of claim 86 wherein X_3 is cycloalkyl.

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92. A taxane having the formula:



R₇ is carbamoyloxy;

R₁₀ is hydroxy;

X₃ is substituted or unsubstituted alkyl, alkenyl, alkynyl, or heterocyclo;

X₅ is -COX₁₀, -COOX₁₀, or -CONHX₁₀;

X₁₀ is hydrocarbyl, substituted hydrocarbyl, or heterocyclo,

Ac is acetyl, and

Bz is benzoyl.

93. The taxane of claim 92 wherein X₃ is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl.

94. The taxane of claim 93 wherein X₅ is -COX₁₀ and X₁₀ is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl, or X₅ is -COOX₁₀ and X₁₀ is substituted or unsubstituted C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl.

95. The taxane of claim 93 wherein X₅ is -COX₁₀ and X₁₀ is phenyl, or X₅ is -COOX₁₀ and X₁₀ is t-butyl.

96. The taxane of claim 92 wherein X₃ is furyl or thienyl.

97. The taxane of claim 96 wherein X₅ is -COX₁₀ and X₁₀ is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl, or X₅ is -COOX₁₀ and X₁₀ is substituted or unsubstituted C₁ - C₈ alkyl, C₂ - C₈ alkenyl, or C₂ - C₈ alkynyl.

98. The taxane of claim 96 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

99. The taxane of claim 93 wherein X_3 is cycloalkyl.

100. The taxane of claim 99 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

101. The taxane of claim 99 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

102. The taxane of claim 93 wherein X_3 is isobutenyl.

103. The taxane of claim 102 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

104. The taxane of claim 102 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

105. The taxane of claim 92 wherein R_7 is $R_{7a}R_{7b}\text{NCOO}-$, one of R_{7a} and R_{7b} is hydrogen and the other is $\text{C}_1 - \text{C}_8$ alkyl, phenyl or heterocyclo.

106. The taxane of claim 105 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

107. The taxane of claim 106 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $\text{C}_1 - \text{C}_8$ alkyl, $\text{C}_2 - \text{C}_8$ alkenyl, or $\text{C}_2 - \text{C}_8$ alkynyl.

108. The taxane of claim 106 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

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109. The taxane of claim 105 wherein X_3 is furyl or thienyl.

110. The taxane of claim 109 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

111. The taxane of claim 109 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

112. The taxane of claim 105 wherein X_3 is cycloalkyl.

113. The taxane of claim 112 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

114. The taxane of claim 112 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

115. The taxane of claim 105 wherein X_3 is isobutenyl.

116. The taxane of claim 115 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

117. The taxane of claim 115 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

118. The taxane of claim 92 wherein X_3 is furyl or thienyl, R_7 is $R_{7a}R_{7b}\text{NCOO}-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is $C_1 - C_8$ alkyl, phenyl, or heterocyclo, and X_5 is $-\text{COX}_{10}$ wherein X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ wherein X_{10} is t-butyl.

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119. The taxane of claim 92 wherein X_3 is substituted or unsubstituted furyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is methyl, ethyl, or straight, branched or cyclic propyl, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

120. The taxane of claim 92 wherein X_3 is substituted or unsubstituted furyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted phenyl or heterocyclo, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

121. The taxane of claim 92 wherein X_3 is substituted or unsubstituted thienyl, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is methyl, ethyl, or straight, branched or cyclic propyl, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

122. The taxane of claim 92 wherein X_3 is substituted or unsubstituted thienyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted phenyl or heterocyclo, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

123. The taxane of claim 92 wherein X_3 is substituted or unsubstituted phenyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is methyl, ethyl, or straight, branched or cyclic propyl, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

124. The taxane of claim 92 wherein X_3 is substituted or unsubstituted phenyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted phenyl or heterocyclo, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

125. The taxane of claim 92 wherein X_3 is isobutenyl, one of R_{7a} and R_{7b} is hydrogen, R_7 is $R_{7a}R_{7b}NCOO-$, the other of R_{7a} and R_{7b} is methyl, ethyl, or straight, branched or cyclic propyl, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

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126. The taxane of claim 92 wherein X_3 is alkyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is methyl, ethyl, or straight, branched or cyclic propyl, and X_5 is $-COX_{10}$ wherein X_{10} is phenyl, or X_5 is $-COOX_{10}$ wherein X_{10} is t-butyl.

127. The taxane of claim 92 wherein X_3 is 2-furyl or 2-thienyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is methyl, ethyl, or straight, branched or cyclic propyl, X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

128. The taxane of claim 92 wherein X_3 is 2-furyl or 2-thienyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted phenyl or heterocyclo, X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

129. The taxane of claim 92 wherein X_3 is cycloalkyl, R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted phenyl or heterocyclo, X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

130. A pharmaceutical composition comprising the taxane of claim 1 and at least one pharmaceutically acceptable carrier.

131. The pharmaceutical composition of claim 130 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

132. The pharmaceutical composition of claim 131 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

133. The pharmaceutical composition of claim 131 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

134. The pharmaceutical composition of claim 130 wherein R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted $C_1 - C_8$ alkyl, phenyl or heterocyclo.

142. The pharmaceutical composition of claim 131 wherein X_3 is alkyl, R_7 is $R_{7a}R_{7b}NCOO^-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is $C_1 - C_8$

alkyl, phenyl or heterocyclo, and X_5 is $-\text{COX}_{10}$ wherein X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ wherein X_{10} is t-butyl.

143. A pharmaceutical composition comprising the taxane of claim 92 and at least one pharmaceutically acceptable carrier.

144. A pharmaceutical composition comprising the taxane of claim 96 and at least one pharmaceutically acceptable carrier.

145. A composition for oral administration comprising the taxane of claim 1 and at least one pharmaceutically acceptable carrier.

146. The composition of claim 145 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

147. The composition of claim 146 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

148. The composition of claim 146 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

149. The composition of claim 145 wherein R_7 is $R_{7a}R_{7b}\text{NCOO}-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted $C_1 - C_8$ alkyl, phenyl or heterocyclo.

150. The composition of claim 149 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

151. The composition of claim 150 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

152. The composition of claim 150 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

153. A composition for oral administration comprising the taxane of claim 92 and at least one pharmaceutically acceptable carrier.

154. A composition for oral administration comprising the taxane of claim 96 and at least one pharmaceutically acceptable carrier.

155. A method of inhibiting tumor growth in a mammal, said method comprising orally administering a therapeutically effective amount of a pharmaceutical composition comprising the taxane of claim 1 and at least one pharmaceutically acceptable carrier.

156. The method of claim 155 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

157. The method of claim 156 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

158. The method of claim 156 wherein X_5 is $-COX_{10}$ and X_{10} is phenyl, or X_5 is $-COOX_{10}$ and X_{10} is t-butyl.

159. The method of claim 155 wherein R_7 is $R_{7a}R_{7b}NCOO-$, one of R_{7a} and R_{7b} is hydrogen, the other of R_{7a} and R_{7b} is substituted or unsubstituted $C_1 - C_8$ alkyl, phenyl or heterocyclo.

160. The method of claim 159 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

161. The method of claim 160 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted $C_1 - C_8$ alkyl, $C_2 - C_8$ alkenyl, or $C_2 - C_8$ alkynyl.

162. The method of claim 160 wherein X_5 is $-\text{COX}_{10}$ and X_{10} is phenyl, or X_5 is $-\text{COOX}_{10}$ and X_{10} is t-butyl.

163. A method of inhibiting tumor growth in a mammal, said method comprising orally administering a therapeutically effective amount of a pharmaceutical composition comprising the taxane of claim 92 and at least one pharmaceutically acceptable carrier.

164. A method of inhibiting tumor growth in a mammal, said method comprising orally administering a therapeutically effective amount of a pharmaceutical composition comprising the taxane of claim 96 and at least one pharmaceutically acceptable carrier.

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